











Fabric

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Abstract of EP0501809

An upholstered three dimensional structure (1) in which there is an upholstery fabric (7) stretched over a three dimensional core (4), the fabric (7) being formed by knitting and incorporating a sewn seam (10) between the knitted fabric (7) and a further fabric (9), the knitted fabric being provided with stable sewing zones (8) which are less elastic than the majority of the remaining portions of the knitted fabric to assist in the sewing of the knitted fabric (7) to a further fabric (9).

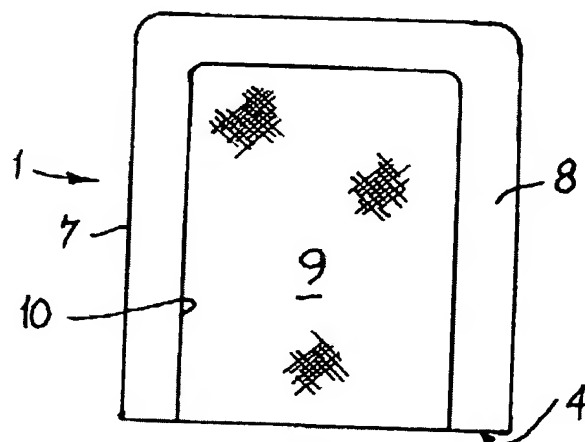


FIG. 2

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(54) **Upholstered three-dimensional structure comprising a fabric and method of its manufacture**
Dreidimensionale Polsterstruktur mit Gestrick und Methode zu dessen Herstellung
Structure de rembourrure tridimensionnelle comprenant un tricot et procédé pour sa fabrication

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Description

This invention relates to fabrics and has particular reference to knitted fabric panels. It has further particular reference to knitted fabric panels intended for use in upholstered structures.

Proposals have been made, see UK Patent Application 2,223,034A, to produce upholstered structures such as upholstered three-dimensional car seats by knitting the entire fabric seat in one operation. This is a radical departure from conventional processes for making upholstered fabric structures wherein the fabric is manufactured by weaving. The woven structure is then cut into shapes and the shapes are stitched together.

The manufacture of upholstered structures by the use of woven fabric requires a number of distinct stages. First of all the yarn has to be formed into a warp and then the warp is transferred to a loom for weaving the fabric. The fabric will inevitably be in rectangular shape. The fabric is then cut into pieces and the pieces are sewn together to form the upholstered fabric for the upholstered structure. At each stage in the operation there are losses in yarn yield - the warp threads must be continuous and therefore there are losses associated with manufacturing the warp. The weaving operation involves further yarn loss and fabric is lost during the cutting operation. All told the total yield of yarn in the upholstered fabric compared to yarn in the bobbin state is no more than about 60% in the case of a vehicle seat. By knitting the upholstery fabric the yarn yields can be in the upper nineties percent. Furthermore, the knitting operation is a single operation requiring less manual input and less skill once the knitting machine has been set up.

In many cases, however, it is necessary to sew onto the knitted fabric of the upholstered structure. This is either because two knitted components have to be sewn together as it is not possible to knit the entire structure in one operation, or a knitted component has to be joined to a woven component.

British Patent Specification 1,276,185 describes the use of a thermoplastic resin filament which can be heated prior to knitting and becomes deformed during knitting. After knitting the entire structure becomes rigid once more.

British Patent Specification 1,214,939 describes a method of preventing the edge of a knitted fabric from unravelling by incorporating shrinking and adhering yarns in the edges.

US Patent Specification 4,755,242 describes a knitted article such as a glove which incorporates a head shrunk multiple plastic yarn along the edge to prevent the edge unravelling.

Japanese Abstract No.602755 further describes a trimmed edge fabric particularly for use in glove manufacture in which there is provided a shrinkable yarn at the free edge which is shrunk by heating.

British Patent Specification 2,223,034 describes

the incorporation of a fusible yarn at the edge of a hem to prevent unravelling.

British Patent Specification 2,168,607 describes three dimensional trim cover assemblies but does not address the problems of sewing together such assemblies.

British Patent Specification 1,308,909 describes the formation of garment panels incorporating start-up courses into which are knitted elastomeric yarns shrunk on subsequent treatment. Such courses are, however, only set up courses for single jersey whole garment parts.

British Patent Specification 1,033,144 describes knitted fabrics for garments such as sweaters in which there is a stabilised free edge which is intended to be stable in the free condition.

European Patent Specification 361,854 describes the use of knitted joins in upholstery fabrics.

What constitutes the present invention is defined in the following claims 1 and 11 and utilises a knitted fabric panel having stable edge portions to ease the sewing of the fabric panel to other fabrics.

The stable edge portions may be provided by a contractile thread, an inherently resilient thread which is stretched by an amount in excess of 50% of its rest length when knitted into the panel. The contractile thread may be a thread which shrinks on the application of an external stimulus, such as heat. The contractile thread may incorporate an inherently resilient thread and a shrinking component. The shrinking component may be fusible at temperatures below 150°C, and preferably is fusible at temperatures below 100°C.

The fabric panel may be welt knitted.

The fabric panel may be a double jersey fabric and may be knitted on a flat V-bed machine. The fabric may be knitted without pull-down, and may be knitted on a presser foot machine. The contractile thread may be included in some or all of the final and/or initial fourteen courses of the fabric, or may be included in some or all of the final and/or initial two to twelve courses. The contractile thread may be incorporated in both the initial and final ten courses of the fabric or in both the initial and final two to ten courses of the fabric. The contractile thread may be included in the initial and/or final 2 cm of fabric, or 1.5 cm or 1 cm of fabric.

In the double jersey knitted structure, the contractile thread may be knitted predominantly onto the reverse side of the fabric if the face side is to be visible in use. The contractile thread may contract to such an extent that, after the knitted fabric has been stretched in a wale-wise direction after knitting, the length of one edge is substantially the same as the width of the fabric along the courses away from the edge, with no significant puckering of the edge.

According to one aspect of the present invention there is provided an upholstered three-dimensional structure in which an upholstery fabric is stretched over a three-dimensional core, a first portion of the fabric be-

ing formed by knitting and including an edge portion providing a sewn seam between the first portion of fabric and a further portion of fabric, which is characterised in that the sewn edge portion of the first portion of fabric has a different stitch structure and is less elastic than the majority of the remaining portions of the said first portion of fabric so as to form a stable sewing zone along the edge portion of said first portion of fabric to be sewn.

The first portion of fabric may be a double jersey fabric, the less elastic sewing zones being in the form of a pair of single jersey layers. The single jersey layers may be 1 x 1 cross-miss single jersey. There may be 32 to 64, preferably 40 to 56 further preferably 48 courses of single jersey. The single jersey may be knitted by knitting on a knitting machine having a pair of opposed needle beds and by knitting a first course on every alternate needle on one bed, a second course on the other needles on the same bed, a third course on every alternate needle on the second bed and a fourth course on the other needles on the second bed. This produces a four course repeat of 1 x 1 cross-miss single jersey. Preferably this four course repeat is knitted twelve times to give 48 courses in all.

The further portion of fabric may be a woven fabric or vinyl fabric or bonded vinyl. The upholstery fabric may be welt knitted. The further portion of fabric may be warp knitted.

The present invention yet further provides a method of forming a knitted fabric panel for use in an upholstered three-dimensional structure, in which the knitted fabric is knitted on a flat V-bed machine without take-down, and in which the fabric is stretched in a wale-wise direction after knitting and before being applied to the three-dimensional core to form the structure, in which the stitch density at the edges of the fabric in a course-wise direction is the same as or greater than the course-wise stitch density in the main body of the panel.

The sewing zone at the edge of the knitted structure may be provided by knitting on the reverse side of the fabric a fusible thread such that the fusible thread knits on every alternate reverse-side needle or knits on two needles out of three on the reverse side, the thread forming the front of the fabric knitting on the alternate reverse-side needle or on the remaining one in three of the alternate reverse needles as well as on the front needles.

The present invention further provides the provision of an anti-ladder edge formed at the uppermost or final edge of the fabric and produced by knitting both the front and back of the double jersey layer with a contractile thread for at least the last course, and preferably for the final two courses.

Embodiments of the present invention will now be described with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of an upholstered vehicle seat;

Figure 2 is a view of the back of the seat of Figure 1 along the line of arrow II;

Figure 3 is a view of a centre panel of Figure 2 after knitting;

Figure 4 is a view of the panel of Figure 3 after stretching without incorporating the present invention;

Figure 5 is a contractile thread construction in enlarged view;

Figures 6 and 7 are detailed edge views of a fabric in accordance with the present invention;

Figure 8 is a stitch diagram of the fabric edge of Figure 7;

Figures 9a, 9b and 9c are computer generated stitch diagrams showing in more detail the structure illustrated in Figure 8;

Figures 10a to 10e are computer generated stitch diagrams of a lower-contraction edge structure;

Figures 11a and 11b are knitted loops before and after shrinking; and

Figures 12a to 12d are computer generated stitch diagrams of an alternate stable edge structure.

Referring to Figure 1, this shows an upholstered vehicle seat indicated generally by 1. The seat comprises a base cushion indicated generally by 2 and a back indicated generally by 3. The upholstered three-dimensional structure essentially comprises a core 4, shown behind the broken-away portion 5 of the base cushion 2, covered with a fabric upholstered cover 6. The fabric cover 6 may be knitted in one piece as is described in British Patent Specification 2,223,034A referred to above.

The back 3 of the seat incorporates a knitted cover 7, but it is not practicable to knit a tube in double jersey structure on a flat V-bed machine. It is practicable to knit tubes into double jersey structures but the tubes then are of single jersey formation. In order to provide an aesthetically pleasing back, therefore, it is necessary to form the cover 7 with integral edge portions 8 (Figure 2) and to sew a further fabric panel 9 to the cover 7, 8 along the line 10.

A convenient way of producing the panel 9 is to knit the panel on a flat V-bed knitting machine. Typically the panel 9 would be knitted on the same or a similar machine as is used to knit the fabric covers 6 and 7. Further typically the fabric panel 9 would be knitted on a machine which does not include take-down such as a presser foot machine. Typically, after knitting, it is found

that the fabric panel 9 has the shape shown in Figure 3, because of the lack of take-down associated with presser foot knitting the fabric panel is compressed in the wale-wise direction 11. To produce the correct shape of panel, therefore, the fabric is stretched to adopt the shape shown in Figure 4. Essentially, by increasing the length of the panel 9 in the wale-wise direction 11 there is a shrinkage of the panel in the course-wise direction 12. However, because the edges of the panel have to be held, to permit the panel to be stretched, it is found that the edges 13 and 14 are not stretched as much as the centre of the panel and, therefore, the edges 13 and 14 tend to pucker. This means that it can be very difficult to sew the panel 9 into the back of the seat as the edges 13, 14 are too long for the aperture into which they are to be sewn. Furthermore, the edges 13, 14, being little stretched, are very elastic and this increases the problem of sewing the fabric portion 9 into the upholstered structure.

The problem of the unstable sewing zone and the excessively puckered edge are resolved by the incorporation of a contractile thread in accordance with the invention.

The particular preferred form of contractile yarn is a three component yarn comprising an elastomeric core 15 around which are wrapped a polyester coloured member 16 and a fusible thread element 17 (Figure 5). However, if required, the polyester element 16 could be combined either with the fusible element 17 alone or the elastomeric element 15 (such as 'Lycra' Registered Trade Mark) alone or with a heat shrinkable component.

The panel 9 is knitted on a flat V-bed machine and is of double jersey construction. The final twelve courses of the panel 9 are knitted with the contractile thread knitting principally on the back face of the double jersey structure. This results in a back face substantially as illustrated in Figure 6 having the contractile elements formed in wales 18 to 23. The conventional polyester yarn forms the wales 24 to 27. From the front face of the fabric the wales appear principally to be formed of polyester with an occasional small amount of contractile yarn being visible at locations 28, 29, 30 and 31. The stitch structure which produces the visible structure of Figure 6 and 7 is illustrated in Figure 8.

The upper layer of needles 32 form the reverse side of the fabric and the lower layer of needles 33 produce the face of the fabric. The contractile thread is shown at 34 and the normal polyester thread is shown at 35. It can be seen that the polyester thread knits on all of the front face needles 33 and on one in three of the rear face needles 32. The contractile thread 34 knits on two in three of the rear face needles.

After the knitting has been completed and the fabric is stretched, the contractile thread 34 pulls the edge tight and prevents the puckering which can be seen at 13, 14 in Figure 4. The contractile thread may work simply by the contraction of the elastomeric component 15 - which is extended by more than 50% during the knitting pro-

cedure and which then simply acts as an elastic 'spring' - or the contraction may be more permanently effected by heating the heat shrinkable or the fusible component 17. Typically the heating operation would be carried out by steaming the fabric.

The formation of the edge shown in Figure 6 and 7 is more clearly understood with reference to Figures 9a to 9c. These are computer generated stitch diagrams, and it will be seen that Figure 9c is effectively the same as Figure 8. However, from Figure 8 it will be appreciated that the portions 28 to 31 showing on the front face of the fabric correspond to the small portions of the contractile thread which can be seen on the face side of the needles as shown in Figure 8. This cannot be seen as clearly in the computer generated stitch diagrams, Figure 9a to 9c.

The contractile thread 34 is knitted onto the upper bed of needles numbers 1 and 2 when the thread carrier is moved in the direction of the arrow 37, i.e. from right to left. When the thread carrier is moved in the opposite direction i.e. from left to right in the direction of arrow 38, a polyester thread 35 is knitted on all of the face needles 33 and also on needle number 3 on the back needles 32. Combining these two layers of knitting together as is shown in Figure 9c produces the highly contractile edge structure of Figures 6 to 8.

A slightly less contractile edge structure can be produced by knitting the contractile thread on every other of the reverse needles 32. Such a structure is shown in Figures 10a to 10e. The structure shown in Figures 10a to 10d show the structure knitted in four successive courses. In Figure 10a a polyester yarn 40 is knitted onto all of the front needles and is knitted only on every alternate back needle. In the next course a fusible thread 41 is knitted on the back needles on the other alternative needles as is shown in Figure 10b. The fusible thread is not knitted on any of the front needles. In the third course of the four course sequence, the polyester thread 42 knits on all of the front needles and on the same reverse needles as the thread 41, as is shown in Figure 10c. In the final course of the sequence, shown in Figure 10d, the contractile thread 43 is knitted only on the back needles, on the needles not knitted on by the thread 42.

Overall, therefore, the structure illustrated in Figure 10e is produced in which the contractile threads are knitted only on the back needles, and the polyester yarns are knitted on all of the front needles and on alternate needles on the back of the bed. For ease of identification, the polyester yarns in Figures 10a-10e have been shown by solid lines and the contractile threads by dotted lines.

The contractile thread may be knitted on all of the needles for the final two courses. This results in the structure shown in Figures 11a and 11b before and after relaxation of the contractile thread. As shown in Figure 11a, the course of loops 50 is formed of conventional polyester material, whereas the courses 51 and 52 are

formed of the contractile thread. After knitting has been complete and the threads have been fully contracted the structure shown in Figure 11b is produced in which the loops 51 and 52 are so entangled as to be almost unpickable. This means that the edges are extremely unlikely to ladder.

Figures 12a to 12d show a two colour four course repeat which forms a very stable sew edge for the double jersey fabric. Because double jersey fabrics incorporate a thread interconnecting the two layers of jersey fabric, the fabric has a certain extensibility. Single jersey fabric is less extensible than double jersey fabrics when extended along the line of the courses. Essentially, therefore, the structure illustrated in Figures 12a to 12d produces a pair of single jersey layers which form a very stable sewing edge. Before knitting the structure shown in Figures 12a to 12d there would be knitted a set up course. After the set up course, the first course knitted would be as illustrated in Figure 12a. A polyester yarn 53 in one colour is knitted on every alternate needle 54, 56, 58 and 60 on the first needle bed indicated generally by 61. The knitting illustrated in Figure 12a is in fact a 1 x 1 cross-miss single jersey structure. The second course of knitting may be knitted in a second colour by the second cams in a double system cam box and as illustrated in Figure 12b a polyester thread 62 in the second colour is knitted on the alternate needles 55, 57, 59 and 63 of the first bed. The third course to be knitted is illustrated in Figure 12c.

In the third course, knitting takes place only on the second bed 64 and a polyester thread 65 of the same colour as thread 53 is knitted on needles 66, 68, 70 and 72. The fourth course of the sequence is illustrated in Figure 12d, in this case a thread 73 of the same colour as thread 62 is knitted on needles 67, 69, 71 and 74 of the second bed by the second set of cams in the double system cam box. This four course structure 12a to 12d is then repeated a further 11 times. This produces a pair of single jersey layers which are not connected to one another. Each layer is a 1 x 1 cross-miss single jersey layer. The knitting then continues as double jersey for the main portion of the upholstery cover. Effectively, therefore, at the beginning of the knitting there is produced a structure comprising a tubular portion followed by a double jersey portion. Because the tubular portion is of single jersey structure it is less extensible than the double jersey structure. Furthermore, because the structure is formed of cross-miss single jersey stitches it is even less extensible than would be the case if the single jersey structure were to be produced by knitting on every needle on each course.

After the main body of the upholstery has been produced in principally double jersey structure, again the fabric is knitted using the structures shown in Figures 12a to 12d. Thus at the end of knitting, the four course repeat structure shown in Figures 12a to 12d is repeated 12 times in all to give a further pair of single jersey layers. Finally, the contractile or fusible thread is knitted to

join the two single jersey layers together and the fabric structure is pressed off from the machine. After pressing off, the fabric structure is heated to cause the fusible or contractile threads to contract as is shown in Figures 11a and 11b.

This stable sewing edge may, therefore, be produced in 100 per cent polyester, preferably the air textured polyester yarns which are used to form the body of the double jersey upholstered structure.

For cosmetic or aesthetic reasons the first two courses of stitches at the beginning of knitting may also be formed wholly of contractile threads so that the upper and lower portions of the knitted fabric are identical, although it will be appreciated that fabrics will not normally run when unpicked from the first course of knitting.

The present invention therefore provides a stable edge zone which has a higher stitch density, in the preferred condition, in the edge compared to the centre of the fabric after the fabric has been stretched and allowed to relax. It will be appreciated that if the fabric is knitted as a simple rectangle, as shown in Figure 3, the edges of the fabric at the beginning and end of the knitted panel will, with the present invention, be of slightly less length after the contractile thread has contracted than the width of the fabric in the centre region of the panel. However, if a panel is knitted which is itself shaped, the edges may deliberately be of different length at the beginning and end of the panels compared to the central region of the panel. However, by providing a substantially greater stitch density the panels will be substantially even in the post contracted state and will incorporate a relatively inflexible stable sewing zone on their sewing edges.

Typical materials for the contractile shrinking thread element would be a polypropylene or a polyamide which is affected by the steam used to steam set the fabric and to produce the shrinking of the contractile thread.

The stable sewing zone may be provided on both of two components to be sewn together if both are formed of an unstable knitted structure. Thus a stable sewing zone may be knitted into the edge 8 of the cover 7 where it is sewn to the back panel 9. In some cases, the stable sewing zone need only be provided on the sewing edge of the knitted cover 7, for example where the back panel 9 is of woven construction, or where a knitted panel is provided which has been produced on a warp knitting machine as a stable structure which has been stentered, and then provided with a bonded backing such as a bonded scrim.

Claims

1. An upholstered three-dimensional structure (1) having an upholstery fabric (7,9) stretched over a three-dimensional core (4); a first portion of fabric (7) being formed by knitting and including an edge portion (8) providing a sewn seam between the first

portion of fabric (7) and a further portion of fabric (9), characterised in that the sewn edge portion (8) of the first portion of fabric (7) has a different stitch structure and is less elastic than the majority of the remaining portions of the said first portion of fabric (7) so as to form a stable sewing zone along the edge portion (8) of said first portion of fabric (7) to be sewn.

2. A structure as claimed in claim 1, further characterised in that the first portion of fabric (7) is knitted as a double jersey fabric.
3. A structure as claimed in claim 2, further characterised in that the less elastic edge portion (8) is in the form of a pair of single jersey layers.
4. A structure as claimed in claim 3, further characterised in that the single jersey layers are 1 x 1 cross-miss single jersey.
5. A structure as claimed in claim 3 or 4, further characterised in that the single jersey layers extend over a plurality of courses of the first portion of fabric (7), the number of courses being selected from the group 32 to 64 courses, or 40 to 56 courses or 48 courses of single jersey.
6. A structure as claimed in any one of claims 1 to 5, further characterised in that the sewing zone is provided by a fusible thread (34) knitted into the reverse side of the first portion of fabric (7).
7. A structure as claimed in any one of claims 1 to 6, further characterised in that the further portion (9) of fabric is chosen from woven fabric, vinyl fabric or bonded vinyl.
8. A method of forming a structure as claimed in claim 4 or 5, characterised in that the single jersey layers are knitted by knitting on a knitting machine having a pair of opposed needle beds (61, 64), and by knitting a first course on every alternate needle (54, 56, 58, 60) on one bed (61), a second course on the other needles (55, 57, 59, 63) on the same bed (61), a third course on every alternate needle (66, 68, 70, 72) on the second bed (64) and a fourth course on the other needles (67, 69, 71, 74) on the second bed (64).
9. A method of forming a structure as claimed in any one of claims 1 to 7, in which a panel of fabric (7) is knitted upon a knitting machine having a pair of opposed needle beds without take-down, and in which the fabric (7) is stretched in a wale-wise direction after knitting and before being applied to the three dimensional core (4) to form the structure (1), and in which the stitch density at the edge portions

(8) of the knitted fabric (7) in a course-wise direction is in the same as or greater than the course-wise stitch density in the main body of the first portion of fabric (7).

10. A method of forming a structure as claimed in claim 6, in which the first portion of fabric (7) is knitted on a knitting machine having opposed needle beds (32, 33), characterised in that the fusible thread (34) is being knitted on every alternate reverse-side needle (32) or is knitted on two out of three reverse side needles (32); the thread (35) forming the front of the fabric being knitted on all of the front needles (33) and on those reverse needles (32) not being knitted upon by the fusible thread (34).
11. A method of manufacture of an upholstered three dimensional structure in which an upholstery fabric (7, 9) is stretched over a three dimensional core, a first portion (7) of the fabric being formed by knitting and having an edge portion (8) which is sewn to a further portion (9) of the fabric, characterised in that in order to prevent stretching of the edge portion (8) along the seam when the edges of the first portion (7) and further portion (9) are sewn together, the edge portion (8) of at least the first portion (7) of fabric is knitted with a different stitch structure so that it is less elastic than the rest of the first portion of fabric, and the first portion of fabric is then sewn along the stabilised edge portion (7) of fabric to the further portion (9) of fabric.

Patentansprüche

1. Eine bezogene dreidimensionale Struktur (1) mit einem Bezugstoff (7, 9), der über einen dreidimensionalen Kern (4) gespannt ist, einem ersten Stoffabschnitt (7), der durch Stricken gebildet ist und einen Kantenabschnitt (8) umfaßt, welcher eine genähte Naht zwischen dem ersten Stoffabschnitt (7) und einem weiteren Stoffabschnitt (9) vorsieht, dadurch gekennzeichnet, daß der genähte Kantenabschnitt (8) des ersten Stoffabschnitts (7) eine andere Maschenstruktur aufweist und weniger elastisch ist als der Hauptteil der verbleibenden Abschnitte des ersten Stoffabschnitts (7), um eine stabile Nähzone längs des Kantenabschnitts (8) des ersten zu nähenden Stoffabschnitts (7) zu bilden.
2. Eine Struktur wie in Anspruch 1 beansprucht, weiter dadurch gekennzeichnet, daß der erste Stoffabschnitt (7) als ein Doppel-Jersey-Stoff gestrickt ist.
3. Eine Struktur wie in Anspruch 2 beansprucht, weiter dadurch gekennzeichnet,

daß der weniger elastische Kantenabschnitt (8) in Form eines Paares von Single-Jersey-Lagen vorliegt.

4. Eine Struktur wie in Anspruch 3 beansprucht, weiter dadurch gekennzeichnet, daß die Single-Jersey-Lagen 1 x 1-Kreuz-Fehl-Single-Jersey sind. 5
5. Eine Struktur wie in Anspruch 3 oder 4 beansprucht, weiter dadurch gekennzeichnet, daß sich die Single-Jersey-Lagen über eine Vielzahl von Maschenreihen des ersten Stoffabschnitts (7) erstrecken, wobei die Anzahl von Maschenreihen aus der Gruppe 32 bis 64 Maschenreihen oder 40 bis 56 Maschenreihen oder 48 Maschenreihen von Single-Jersey ausgewählt sind. 10 15
6. Eine Struktur wie in einem der Ansprüche 1 bis 5 beansprucht, weiter dadurch gekennzeichnet, daß die Nähzone von einem schmelzbaren Faden (34) vorgesehen ist, der in die Rückseite des ersten Stoffabschnitts (7) gestrickt ist. 20 25
7. Eine Struktur wie in einem der Ansprüche 1 bis 6 beansprucht, weiter dadurch gekennzeichnet, daß der weitere Stoffabschnitt (9) aus gewebtem Stoff, Vinylstoff oder gebondetem Vinyl ausgewählt ist. 30
8. Ein Verfahren zum Bilden einer Struktur wie in Anspruch 4 oder 5 beansprucht, dadurch gekennzeichnet, daß die Single-Jersey-Lagen durch Stricken auf einer Strickmaschine mit einem Paar von gegenüberliegenden Nadelbetten (61, 64) und durch Stricken einer ersten Maschenreihe auf jeder zweiten Nadel (54, 56, 58, 60) auf dem einen Bett (61), einer zweiten Maschenreihe auf den anderen Nadeln (55, 57, 59, 63) auf demselben Bett (61), einer dritten Maschenreihe auf jeder zweiten Nadel (66, 68, 70, 72) auf dem zweiten Bett (64) und einer vierten Maschenreihe auf den anderen Nadeln (67, 69, 71, 74) auf dem zweiten Bett (64) gestrickt werden. 35 40 45
9. Ein Verfahren zum Bilden einer Struktur wie in einem der Ansprüche 1 bis 7 beansprucht, in welchem ein Stoffeinsatz (7) auf einer Strickmaschine mit einem Paar von gegenüberliegenden Nadelbetten ohne Abnehmen gestrickt wird, und in welchem der Stoff (7) in einer Maschenstäbchenrichtung nach dem Stricken und bevor er auf den dreidimensionalen Kern (4) aufgebracht wird, gestreckt wird, um die Struktur (1) zu bilden, und in welchem die Maschendichte an den Kantenab-

schnitten (8) des gestrickten Stoffes (7) in einer Maschenreihenrichtung gleich oder größer als die Maschendichte in Maschenreihenrichtung im Hauptkörper des ersten Stoffabschnitts (7) ist.

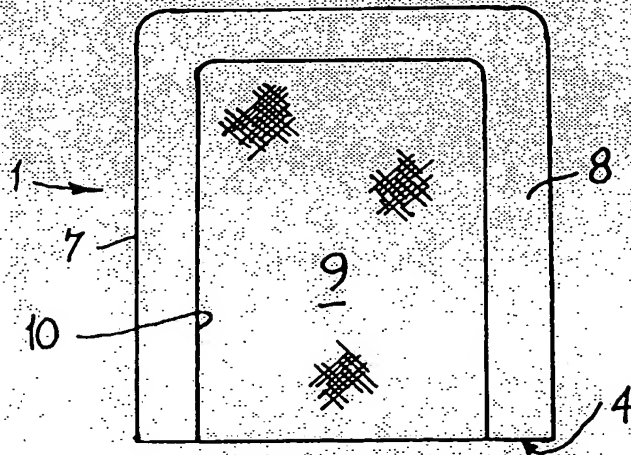
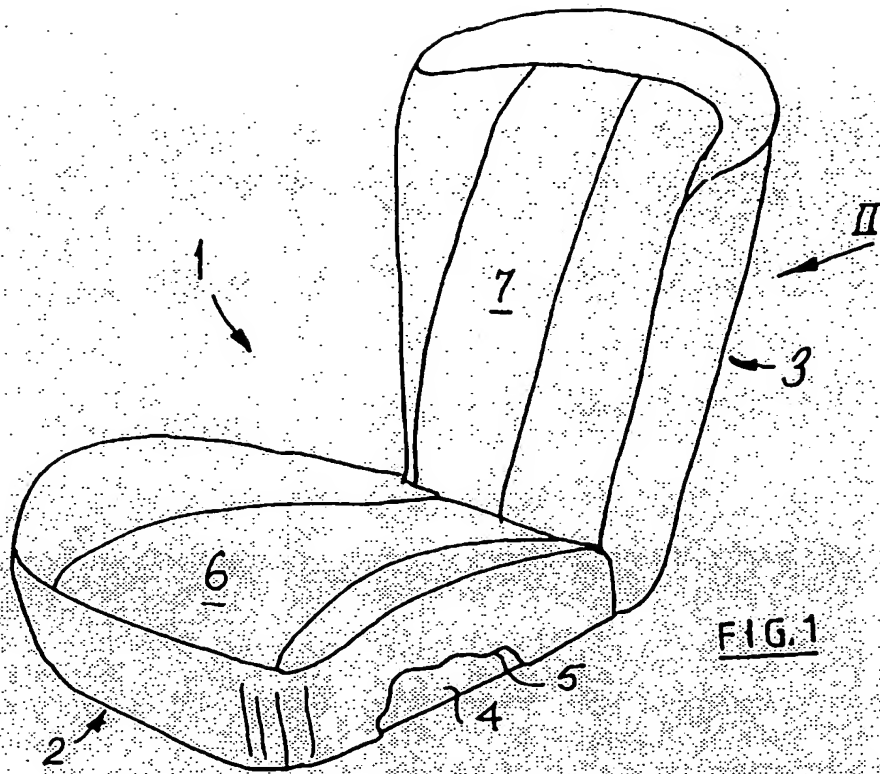
10. Ein Verfahren zum Bilden einer Struktur wie in Anspruch 6 beansprucht, in welchem der erste Stoffabschnitt (7) auf einer Strickmaschine mit gegenüberliegenden Nadelbetten (32, 33) gestrickt wird, dadurch gekennzeichnet, daß der schmelzbare Faden (34) auf jeder zweiten Rückseitennadel (32) oder auf zwei von drei Rückseitennadeln (32) gestrickt wird, wobei der die Front des Stoffes bildende Faden (35) auf allen vorderen Nadeln (33) und auf denjenigen hinteren Nadeln (32) gestrickt wird, auf denen nicht durch den schmelzbaren Faden (34) gestrickt wird.
11. Ein Verfahren zur Herstellung einer bezogenen dreidimensionalen Struktur, in welcher ein Bezugstoff (7, 9) über einen dreidimensionalen Kern gespannt ist, wobei ein erster Abschnitt (7) des Stoffes durch Stricken gebildet wird und einen Kantenabschnitt (8) aufweist, der an einen weiteren Abschnitt (9) des Stoffes genäht ist, dadurch gekennzeichnet, daß, um Strecken des Kantenabschnitts (8) längs der Naht zu verhindern, wenn die Kanten des ersten Abschnitts (7) und des weiteren Abschnitts (9) zusammengeknüpft werden, der Kantenabschnitt (8) wenigstens des ersten Stoffabschnitts (7) mit einer anderen Maschenstruktur gestrickt wird, so daß er weniger elastisch als der Rest des ersten Stoffabschnitts ist, und der erste Stoffabschnitt dann längs des stabilisierten Kantenabschnitts (7) von Stoff an den weiteren Stoffabschnitt (9) genäht wird.

Revendications

1. Structure tridimensionnelle rembourrée (1) comportant un tissu de rembourrage (7,9) étiré sur une partie centrale tridimensionnelle (4), une première partie de tissu (7) étant réalisée par tricotage et comprenant une partie (8) formant lisière sur laquelle se trouve une couture cousue entre la première partie de tissu (7) et une autre partie de tissu (9).

caractérisée en ce que la partie de lisière cousue (8) de la première partie de tissu (7) a une structure de mailles différente et est moins élastique que la majorité des parties restantes de ladite première partie de tissu (7) de façon à former une zone à coudre stable le long de la partie (8) formant lisière de ladite première partie de tissu (7) devant être cousue.

2. Structure selon la revendication 1, caractérisée en outre en ce que la première partie de tissu (7) est tricotée sous forme de tissu double jersey.
3. Structure selon la revendication 2, caractérisée en outre en ce que la partie de lisière (8) moins élastique se présente sous forme d'une paire de couches de jersey simple.
4. Structure selon la revendication 3, caractérisée en outre en ce que les couches de jersey simple sont du jersey simple à mailles sautées transversalement 1 X 1.
5. Structure selon la revendication 3 ou 4, caractérisée en outre en ce que les couches de jersey simple s'étendent sur une pluralité de rangées de mailles de la première partie de tissu (7), le nombre de rangées de mailles étant sélectionné parmi les rangées de mailles des groupes 32 à 64, ou les rangées de mailles 40 à 56 ou la rangée de mailles 48 de jersey simple.
6. Structure selon l'une quelconque des revendications 1 à 5, caractérisée en outre en ce que la zone à coudre est fournie par un fil fusible (34) tricoté dans l'envers de la première partie de tissu (7).
7. Structure selon l'une quelconque des revendications 1 à 6, caractérisée en outre en ce que l'autre partie (9) de tissu est sélectionnée parmi un tissu tissé, un tissu de vinyle ou vinyle lié.
8. Procédé pour réaliser une structure selon la revendication 4 ou 5, caractérisé en ce que les couches de jersey simple sont tricotées par tricotage sur une machine à tricoter comportant une paire de fontures opposées (61, 64), et par tricotage d'une première rangée de mailles en alternance sur une aiguille sur deux (54, 56, 58, 60) d'une première fonture (61), d'une seconde rangée de mailles sur les autres aiguilles (55, 57, 59, 63) de la même fonture (61), d'une troisième rangée de mailles en alternance sur une aiguille sur deux (66, 68, 70, 72) de la seconde fonture (64), et d'une quatrième rangée de mailles sur les autres aiguilles (67, 69, 71, 74) de la seconde fonture (64).
9. Procédé pour réaliser une structure selon l'une quelconque des revendications 1 à 7, dans lequel un panneau de tissu (7) est tricoté sur une machine à tricoter comportant une paire de fontures opposées sans dispositif d'enroulement, et dans lequel le tissu (7) est étiré dans la direction des colonnes de mailles après tricotage et avant d'être appliqué sur la partie centrale tridimensionnelle (4) pour réaliser la structure (1), et dans lequel la densité des mailles sur les parties (8) de lisière du tissu tricoté (7) dans la direction des rangées de mailles est de même densité de mailles ou de densité plus grande que la densité des mailles dans le corps principal de la première partie de tissu (7).
10. Procédé pour réaliser une structure selon la revendication 6, dans lequel la première partie de tissu (7) est tricotée sur une machine à tricoter comportant des fontures opposées (32, 33); caractérisé en ce que le fil fusible (34) est tricoté en alternance sur une aiguille sur deux (32) de l'envers ou est tricoté sur deux aiguilles sur trois (32) de l'envers, le fil (35) servant à former la face du tissu étant tricoté sur toutes les aiguilles à l'avant (33) et sur les aiguilles à l'envers (32) sur lesquelles n'est pas tricoté le fil fusible (34).
11. Procédé de fabrication d'une structure tridimensionnelle rembourrée, dans lequel un tissu de rembourrage (7, 9) est étiré sur une partie centrale tridimensionnelle, une première partie (7) du tissu étant réalisée par tricotage et comportant une partie (8) formant lisière qui est cousue à une autre partie (9) du tissu, caractérisé en ce que, afin d'éviter l'éclatement de la partie (8) formant lisière le long de la couture lorsque les lisières de la première partie (7) et de l'autre partie (9) sont réunies par couture, la partie (8) formant lisière d'au moins la première partie (7) de tissu est tricotée avec une structure de mailles différente de sorte qu'elle est moins élastique que le reste de la première partie de tissu, et la première partie de tissu est ensuite cousue le long de la partie de lisière stabilisée (7) de tissu à l'autre partie (9) de tissu.



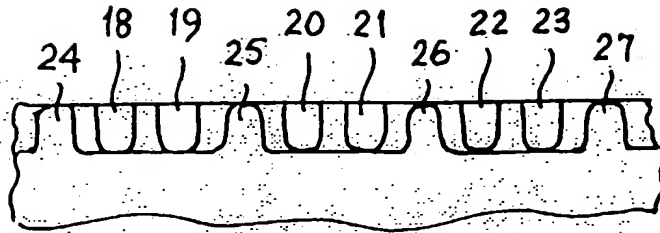


FIG. 6

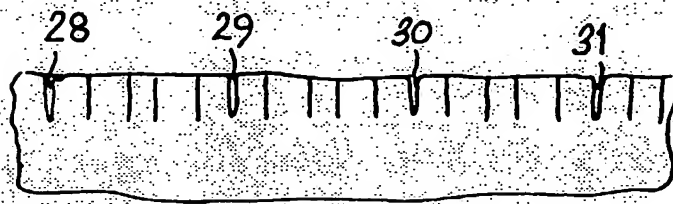


FIG. 7

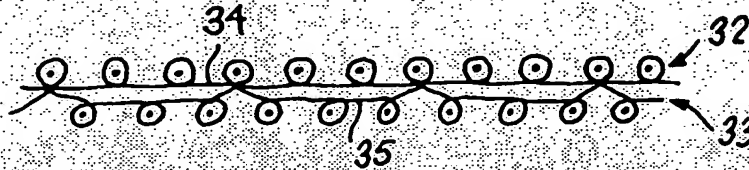


FIG. 8

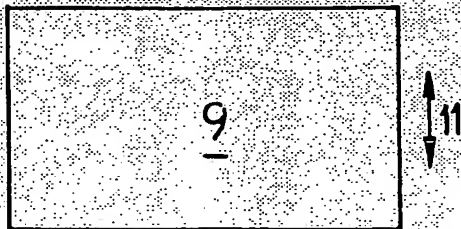


FIG. 3

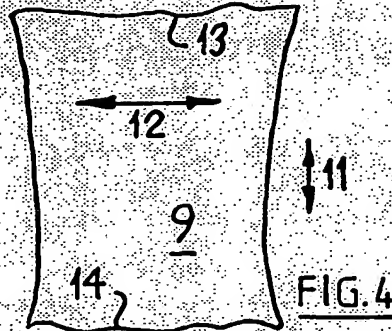


FIG. 4

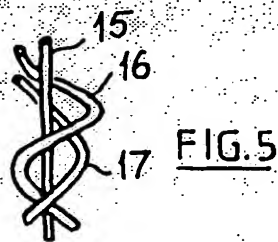


FIG. 5

